Uganda

Estimation of Commodity Requirements for 2003

Drugs to Treat Opportunistic Infections

Prepared for the Ministry of Health, Uganda

Yasmin Chandani
Moses Muwonge
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May 2003

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DELIVER

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Abstract

Details the quantification methodology used to estimate the drug needs for opportunistic and intercurrent infections and conditions (OI/C) and palliative care in the public sector in Uganda for 2003. A primary assumption underlying the quantification was that antiretrovirals would not be widely available in the public sector. The report includes short-term and medium- to long-term recommendations. (40 pages)

Uganda Ministry of Health

DELIVER
John Snow, Inc.
1616 North Fort Myer Drive, 11th Floor
Arlington, VA 22209 USA
Phone: 703-528-7474
Fax: 703-528-7480
Email: deliver_project@jsi.com
Internet: deliver.jsi.com

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Acronyms

ACP	AIDS control program
AIC	AIDS Information Center
AIDS	acquired immune deficiency syndrome
AIM	USAID-funded district based AIDS project
ART	antiretroviral therapy
ARV	antiretroviral
CDC	Centers for Disease Control and Prevention
CDC/GAP	Centers for Disease Control and Prevention/Global AIDS Program
CM	Cryptococcal meningitis
CQ	chloroquine
DANIDA	Danish International Development Agency
DANIDA/GOU	See DANIDA and GOU
DFID	British Department of International Development
DOTS	directly observed treatment short-course
ED	essential drugs
EDP	essential drug program
EGPAF	Elizabeth Glaser Paediatric AIDS Foundation
EU	European Union
GDF	Global Drug Facility
GFATM	Global Fund to Fight AIDS, TB and Malaria
GLRA	German Leprosy Relief Association
GOU	Government of Uganda
GTZ	*Deutsche Gesellschaft fur Technische Zusammenarbeit* (German international development agency)
HIV	human immunodeficiency virus
HIV/AIDS	see HIV and AIDS
HSSP	DANIDA-funded Health Sector Support Project
IPT	intermittent presumptive treatment
Irish AID	Irish AID
JMS	joint medical stores
JSI	John Snow, Inc.
KfW	German funding agency for international development
LP	lumbar puncture
MAP	Multi Country AIDS Program
MOH	Ministry of Health
MOH/ACP	Ministry of Health/AIDS Control Program
MOH/U	Ministry of Health/Uganda
MTCT	mother-to-child transmission
NBTU	Nakasero blood transfusion unit
NDA	National Drug Authority
NGO	nongovernmental organization
NMS	National Medical Stores
NMS/JMS	National Medical Stores/joint medical stores
NORAD	Norwegian Aid Agency
OC	oesophageal candidiasis
OI	opportunistic infection
OI/C	opportunistic and intercurrent infections and conditions

PHC	primary health care
PHC-CG	primary health care-conditional grants
PLWHA	people living with HIV/AIDS (also PLA and PLWA)
PMTCT	preventing MTCT
RPR	rapid plasma reagin test
SIDA	Swedish International Development Agency
SP	sulphadoxine/pyrimethamine
STD/ACP	sexually transmitted disease/AIDS control program disease
STG	standard treatment guidelines
STI	sexually transmitted infection
STI/HIV	sexually transmitted infection/human immunodeficiency virus
STI/OI	see STI and OI
SWAp	Sector Wide Approach
TASO	The AIDS Support Organization
TB	tuberculosis
TB/HIV	see TB and HIV
UAC	Uganda AIDS Commission
UNAIDS	United Nations Programme on HIV/AIDS
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
UVRI	Uganda Virus Research Institute
VCT	voluntary counseling and testing (HIV)
WB	World Bank
WHO	World Health Organization (Geneva, Switzerland)

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The views stated in this report are those of the authors and do not necessarily reflect the views of the U.S. Agency for International Development or the Uganda Ministry of Health.

Executive Summary

Funding sources for procuring commodities for HIV/AIDS programs are increasing in Uganda, and include the Ministry of Health (MOH) budget; the World Bank supported Multi Country AIDS Program (MAP); the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM); and resources from donors and foundations. Without a systematic attempt to quantify commodities for all HIV/AIDS programs and coordinated procurement and ordering, however, there is a great risk of less than optimal use of resources through duplicate and incorrect orders.

As part of expanding its HIV/AIDS services, the Ministry of Health Uganda (MOH/U) will channel new funds toward purchasing a wide range of commodities, including laboratory reagents (HIV test kits, syphilis RPR kits); as well as drugs for treating sexually transmitted infections (STI), tuberculosis (TB), opportunistic and intercurrent infections and conditions (OI/C), and antiretrovirals (ARV), either as a single dose for prevention of mother-to-child transmission (MTCT) or as combination therapy. This report provides details about the quantification methodology used for estimating needs of drugs for OI/C and palliative care in the public sector in Uganda for 2003. A primary assumption underlying the quantification was that ARVs would not yet be available on a wide scale in the public sector. Separate reports exist or will be compiled for each of the other categories of commodities.

Short-term Recommendations

The team's recommendations include the following:

- Ensure that quantities for treating OI/C in children are quantified and included in the overall needs estimates for OI/C and palliative care drugs.

- Engage in discussions with local representatives from Axios and Pfizer to determine if Pfizer can donate quantities of amphotericin B and fluconazole listed in table 3 (or quantities adjusted for existing cases of Cryptococcal meningitis (CM) and opportunistic conditions (OC). If donations of either drug are not possible, ensure that quantities are procured using MAP funds.

- During the tendering process for these items under MAP, ensure that appropriate steps are taken to avoid delays of incoming products due to awards given to unregistered product manufacturers, as was the case with earlier awards for STI and TB drugs.

- When developing the procurement plan, consult the National Medical Stores (NMS) on stock status to prevent overstocking of certain items (such as antimalarial drugs), and ensure that there is sufficient storage space for incoming items at the NMS' warehouse.

- Given that these items will enter the existing drug supply system managed by NMS, ensure that MOH has sufficient funds to pay NMS for storage and distribution. In addition, if special arrangements are required for distribution and reporting of specialized drugs, ensure these are developed and disseminated prior to arrival of the drugs.

Medium- to Long-Term Recommendations

- Continue to explore mechanisms for regularly tracking consumption of these items and compare them to service statistics data to validate quantities ordered and to ensure availability of more accurate data for future quantification exercises. Of particular concern is the possibility that more than 49 percent of patients with OI/C might access public sector health facilities because (1) a more regular drug supply is likely to increase patient attendance; and (2) patients with OI/C might not exhibit the same health seeking behavior as demonstrated by the World Health Organization (WHO) study. This is because their health care needs are increasing without a corresponding increase in financial resources to pay for health care. If either of these hypotheses are true, drug quantities listed earlier will need to be increased to meet the higher demand.

- Expedite the development and maintenance of a central commodity database to keep track of all MOH and donor inputs for essential health commodity supplies. This information has been, and is likely to continue to be, crucial in alerting commodity management donors and stakeholders about impending stockouts or shortages in various product categories.

- The MOH, Uganda AIDS Commision (UAC), World Bank (WB), and National Drug Authority (NDA) staff need to communicate regularly on shipment status of awarded tenders to ensure that potential delays of incoming commodities, whether through delayed registration or other causes, are identified early enough for timely resolution.

Background

The Government of Uganda (GOU) estimates that the antenatal HIV prevalence is 6.1 percent and approximately 1.1 million people with HIV/AIDS are living in the country. Growing government commitment and nongovernmental organizations involvement, coupled with strong support from international donor organizations, has contributed to both a reduction in prevalence and an increase in HIV/AIDS knowledge and program development. However, to continue the progress, there is a need to greatly expand the range and quality of prevention, care, and support interventions.

The availability of HIV/AIDS commodities will be central to the effort to expand the range and quality of services being offered. To ensure the consistent and reliable availability of these commodities to customers, programs must, in the medium- to long-term—

- Be able to quantify their commodity needs.
- Have or orchestrate resources to ensure procurement of these commodities.
- Have or access skills to procure these commodities.
- Deliver the commodities reliably to all customers along the supply chain.

Recognizing this, the GOU/Ministry of Health (MOH) has requested the DELIVER/Uganda project to assist in coordinating the quantification of the range of commodities required by HIV/AIDS programs. This quantification will provide a detailed justification for all HIV/AIDS commodity requirements across both the public and civil society sectors for 2002 and 2003. Currently, there are several funding sources that are and can be used to procure commodities for HIV/AIDS programs, including the MOH budget, the World Bank (WB) supported Multi Country AIDS Program (MAP), funds from the Global Funds to Fight AIDS, Tuberculosis and Malaria (GFATM), and resources from donors and foundations. Without a systematic attempt to quantify commodities for all HIV/AIDS programs and a coordination of procurement and ordering, however, there is a great risk of less than optimal use of resources through duplicate and incorrect orders.

Many commodities included under the umbrella of HIV/AIDS are already on the essential drugs list and are used specifically by HIV/AIDS program components (e.g., sexually transmitted infection [STI], tuberculosis [TB], and opportunistic infection [OI] drugs), as well as for other purposes. Thus, this document will focus on HIV/AIDS program logistics and commodities while referencing other public health commodities, where appropriate, given GOU's long-term goal to integrate supply and logistics systems for all health programs.

Key stakeholders involved in implementing HIV/AIDS prevention and treatment programs include the Uganda AIDS Commission (UAC), the Ministry of Health AIDS Control Program (MOH/ACP), and the Uganda Blood Transfusion Unit; nongovernmental organizations (NGOs), including the AIDS Information Center (AIC) and The AIDS Support Organization (TASO); and other cooperating agencies, such as the Centers for Disease Control and Prevention (CDC), and AIM Uganda.

Overview: Commodity Financing in the Public Sector

In general, financing for commodities used in public sector facilities combines MOH and donor funds. Donors can contribute in two ways: (1) through Sector Wide Approach (SWAp) funding via budget support to the Ministry of Finance; or (2) through provision of in-kind contributions, such as direct supplies of commodities to specific programs. To date, there has been no central mechanism or section of the MOH that keeps track of all the various donor inputs, in terms of commodity supplies. However, DELIVER/Uganda is currently working with the pharmacy section to establish a commodity tracking database that will maintain records of all donor commodity inputs.

The following is an approximate summary of funding sources, by program, for commodities in the public sector in Uganda. The focus is on commodity inputs for lower-level health units (HC II, III, and IV) and not district, regional, and referral hospitals.

1. Essential Drugs

Health units currently obtain essential drugs and supplies in the following ways:

- Pre-packed essential drug program (EDP) kits, which are procured centrally and distributed to all public sector health facilities on a quarterly basis. Funding for the 30–40 essential drugs included in the kit has come from the GOU and Danish International Development Agency (DANIDA), through its Health Sector Support Project (HSSP). The content of the kits has recently been updated to more accurately reflect health facility needs. The supply of drugs in the kit is generally insufficient for health unit needs', as the supply only lasts 1–1.5 months.

- Direct purchases by the district or health units using funds from the primary health care conditional grants. In theory, after the funds have been released, 50 percent are available for drug purchases to supplement supplies in the kit. In practice, delays in the release of funds and reporting requirements on use of the funds have led to limited use of primary health care conditional grants (PHC-CG) for purchasing drugs.

Even if the full amount allocated for drugs from the PHC-CG were released regularly, funding is still not sufficient for drug needs at the lower levels. A recent study conducted by MOH/pharmacy section and Uganda HSSP demonstrated that districts require approximately U.S.$2.40 per capita to provide sufficient commodities for the minimum package of services that GOU has committed to providing for Ugandans. Currently, including all GOU and partner direct and in-kind contributions, only about U.S.$0.96 per capita is being spent on commodities.

To address the issue of irregular and insufficient supplies, the pharmacy section is planning a phased transition to a comprehensive order-based system for essential health commodities. The transition to the new "pull" system will begin in January 2003. Key elements of the new system include—

- To instill the idea of a "value" for the kit among lower level health units. DANIDA/GOU funding for essential drugs will be a budget line equal to the value of the imported kit.

- During the transitional period, health units can use the budget line to purchase locally assembled kits until they have sufficient capacity to estimate their requirements and place orders for individual items.

- Eventually comprehensive orders will be placed using funds from both the essential drugs (ED) budget line and the PHC-CG budget, and each health unit will have separate accounts at the National Medical Stores/joint medical stores (NMS/JMS).

- Donated products for vertical programs will be integrated onto the order form for the pull system to encourage systematic orders to be placed by each health facility for all its commodity needs.

2. Drugs to Treat STIs, OI/Cs, and Palliative Care

Funding for these supplies has been erratic in the last several years. Initially, the World Bank STI project (1995–2000) supplied condoms for STI/HIV prevention, drugs for STI syndromic management, TB treatment according to directly observed treatment short-course (DOTS), and treatment of opportunistic and intercurrent infections and conditions (OI/C). Other donors for these commodities during the same period included British Department for International Development (DFID) and *Kreditanstalt für Wiederaufbau* (KfW) (a German funding agency for international development). These commodities were provided to MOH, NGO, and mission sites. After the project funding ran out in 2000, a small amount of MOH funds were allocated to purchase STI drugs. This money was never used for STI drug purchases but reallocated for purchasing EDP kits.

Consequently, since the end of 2000, there has been no specific provision of STI or OI/C drugs to lower levels, through the national program, on a consistent basis, because the EDP kits purchased do not contain all the drugs required for syndromic management of STIs. In theory, districts should have been able to obtain these drugs by ordering from National Medical Stores (NMS) using their PHC-CG drug budgets. In practice, release of the primary health care (PHC) grants has not been timely and districts have had difficulties accessing funds after their release. Thus, it is likely that health centers have had inconsistent supplies and shortages of these drugs. Although TB and malaria drugs were also affected by the shortages in funding, the programs have been better able to mobilize other donor resources to ensure provision of supplies.

Between April–July 2002, most of an emergency shipment, valued at U.S.$1.3 million, of drugs for STI, TB, OI, and HIV test kits, syphilis test kits, and expendable medical supplies arrived, procured through the World Bank-assisted MAP project. Through standard non-emergency procedures, the project has also procured substantial amounts of HIV/AIDS commodities, which will be supplied through the Uganda AIDS commission and the MOH, starting in early 2003. Although estimates were made of commodities required for treating STIs, TB, malaria, and specialized OIs, this was a budget-driven exercise rather than a systematic quantification of needs for both public and civil society sectors based on demand and a realistic assessment of Uganda's capacity to deliver services and supplies.

3. Malaria Drugs

The main funding source for antimalarial drugs is the government via budget support to the treasury from donor agencies. This money, the conditional PHC grant, is, in turn, supplied to the district health departments. After district health departments are informed of their allotment, they are required to spend 50 percent of the amount on drugs, part of which is spent on antimalarials. Districts and health units also receive antimalarial drugs in the pre-packed EDP kit.

In times of crisis, donor agencies have been known to purchase antimalarial drugs directly on behalf of the government and supply them to the MOH for distribution. The World Health Organization (WHO) provided this support during a malaria epidemic in the late 1990s. On the whole, however, there is no coordinated approach to donor support of the malaria program.

Most recently, as of July 2002, with the change in the policy of chloroquine (CQ) and sulphadoxine-pyrimethamine (SP) as first-line treatment, the MOH did not plan for additional antimalarial drugs to be purchased under the MAP project. This has resulted in low stock levels of both first-line and second-line treatment drugs, especially SP. The issue of an impending stockout was discussed at the joint meeting of MOH and donors in April, and DFID and Irish AID both agreed to step in and fill the gap by purchasing a one-year supply each of SP and quinine, worth $1.2 million. As an emergency measure, a two-month supply of SP was bought locally and distributed in July and August. Another four-month supply is being air-shipped in, while the remaining six-month supply will come in through a regular sea shipment. Unfortunately, the long registration process for double-scored packs of quinine has resulted in a delay in purchasing and bringing in stop-gap quinine supplies. Details on the quantification can be found in the companion report on antimalarial drugs.

4. Tuberculosis Drugs

There have been two main sources of funding for TB drugs in recent years: the MOH and the German Leprosy Relief Association (GLRA). The primary source during the later 1990s was the MOH. Between 1995 and 2000, funds from the World Bank STI Project were used to supply TB drugs. GLRA also supplied TB drugs between 1995 and 2000, especially during lapses in the MOH procurement process.

More recently (2001), the TB program has been relying on a World Bank Debt Relief Facility and GLRA to supply its TB drugs. Although the TB program expects this to change in the near future through the World Bank MAP project supplies, orders of a one-year supply of drugs through that mechanism have been delayed due to the lengthy registration process for manufacturers for the TB 4 and TB 2 blister packs.

Similarly, suppliers from the Global Drug Facility of the STOP TB fund are unable to step in and cover the potential shortage in TB drugs because products from their manufacturing site are not registered in Uganda and the long registration process is hindering quick action in this area.

The TB program applied for funds through the GFATM, but, to date, they have not received an award of funds through this mechanism.

A detailed outline of the organizational structure, management, and functioning of the TB program can be found in the companion report on TB drugs.

5. HIV Test Kits

In the past, HIV rapid test kits for voluntary counseling and testing (VCT) and preventing mother-to-child transmission (PMTCT) were funded by a variety of sources, including the Center for Disease Control and Prevention Global AIDS Program (CDC/GAP), DFID, the Norwegian Aid Agency (NORAD)/UNFPA VCT Project, UNICEF, and USAID. Funding for these services and supplies is currently provided by the following sources: Elizabeth Glaser Paediatric AIDS Foundation (EGPAF), European Union (EU), Irish AID, UNICEF, USAID, and the MAP project. For the National Blood Safety program, the Nakasero Blood Transfusion Unit (NBTU) receives 40 percent of its operating budget from the European Union, and these funds are used to procure HIV ELISA test kits for testing of donated blood, hepatitis B test kits, and syphilis test kits. The remaining 60 percent of its funding is through budgetary allocations from the MOH, and this money is also used to procure supplies, such as blood bags, reagents, etc. NBTU recently received support from DFID for an emergency shipment of a three-month supply of blood bags to prevent a national stockout. The certainty of continued EU funding for the program is not assured, and it is important that the unit's supply needs are quantified with other test kit requirements.

The MOH/ACP will receive some HIV test kits through the World Bank MAP project described earlier. In addition, Uganda recently submitted a Country Proposal to the GFATM, and was awarded $53 million in August 2002. Approximately 40 percent of the total funding submission will be used for commodity purchase, but detailed quantification of HIV test kits and other supplies is needed before final commodity purchase and detailed procurement plans can be made.

The following section summarizes the initial quantification of drugs for treating opportunistic and intercurrent conditions and infections and palliative care for the public sector in Uganda for 2003. This report and all the information contained therein, represents the first time a needs-based quantification has been conducted for this range of conditions in the public sector in Uganda. Given the dearth of hard data on past consumption of these drugs, and prevalence rates of OI/Cs, the quantification process relied heavily on the expertise and knowledge of key stakeholders, especially the pharmacy sections and sexually transmitted disease/AIDS control program (STD/ACP) program within the MOH.

Because of the scarcity of hard data, the quantification is based on a series of generally liberal assumptions related to staff, training in the treatment guidelines, prevalence rates, and overlap of drug use for OI/Cs and other purposes. If some of these assumptions are not met, the proportional quantities of OI/C drugs might have to be adjusted. Another important point to keep in mind is that, given alternative uses of these same drugs for other health problems, tracking the accuracy of the forecast will be difficult.

Quantification of Drugs for Treating Opportunistic and Intercurrent Infections and Conditions, and Palliative Care

Background

The treatment of OI/C occurs at all levels of the public sector health system, and treatment was implemented during the five years of the World Bank STI Project (1995–2000). The majority of patients experiencing any OI/C tend to access the system at HC II and HC III, and can be treated for simple OI/Cs at those levels. However, for the more specialized OI/Cs, such as Kaposi's sarcoma and Cryptococcal meningitis (CM), as well as severe cases of some other OI/Cs, treatment is given at the hospital level. One of the biggest challenges providers face is diagnosing the underlying cause of OI/Cs. In the majority of cases, patients are treated for symptoms and referred to higher levels when symptoms do not respond to treatment or get worse. As a result, once diagnosis is confirmed, disease is often advanced, especially in the case of CM. Although clinical guidelines for treating OI/Cs exist for PHC levels, standard treatment guidelines (STG) have not been widely disseminated at those levels or at hospital levels. Thus, there is likely to be some variation in how different sites and levels treat patients presenting with OI/Cs.

Although data on a short list of OI/Cs is captured in the most recent HIV/AIDS surveillance report, incomplete reporting rates by health units suggest that the number of cases are underestimated and do not reflect the true magnitude of the problem.[1] Percentages and numbers of episodes for each OI/C were developed in consultation with the MOH Pharmacy Unit and AIDS Control Programme.

In contrast, provision of palliative care services is a relatively new initiative by the MOH. Currently, palliative care is provided through the public sector in 14 districts, at a few referral sites only. In 2003, the MOH will enter the second phase of scaling-up access to palliative care, which entails expanding service provision to lower levels within the 14 districts and phased expansion to the remaining 42 districts over the 12-month period. Drugs for providing palliative care services were quantified for the whole country.

Assumptions

The final quantities of drugs and consumables to order should be interpreted within the context of the following assumptions. Without reference to the assumptions, there is a risk that the program will underorder or overorder certain items, depending on their future expansion plans and/or changes in the current status of service provision.

1. This quantification was conducted using a combination of morbidity and service statistics data. A consumption- and logistics-based forecast was not conducted for this quantification. This is primarily because, at the national level, there have been prolonged shortages and stockouts of drugs to treat OI/Cs in the public sector since the World Bank STI project ended in 2000. This was confirmed for all drugs by the findings from a recent WHO survey, which revealed that, on

[1] HIV/AIDS Surveillance Report. June 2002. STD/AIDS Control Programme, Ministry of Health, Uganda.

average, 35 percent of facilities did not have key drugs to treat commonly occurring infections in Uganda.[2]

2. Although the purpose of this quantification is to estimate the amounts of drugs required to treat OI/C in the public sector, in practice the drugs will supplement the existing drug supply for PHC and hospitals and not be restricted for OI/C treatment only. The drugs will be stored and distributed along with all other essential drugs managed by NMS. Ensuring that there is a regular supply of drugs for OI/C treatment at all levels is not realistic in the current environment because (a) virtually all drugs (99 percent) being quantified are routinely used for purposes other than OI/C treatment; (b) conducting a national quantification exercise to determine all essential drug needs, thereby determining the proportion required specifically for OI/C treatment, is not in line with the principles of decentralized quantification under the new pull system; and (c) even if national needs were known, the essential drugs budget is not sufficient to purchase the total quantities needed.

3. This quantification was conducted for the overall estimated needs for treating OI/Cs in the absence of widespread use of antiretroviral therapy (ART) in the public sector. Furthermore, specialized OI/Cs such as toxoplasmosis and cytomegalo virus, were not included, given the high prices for treating those infections and the likelihood that drugs for treating them would not be available in the public sector. Treatment was determined by consulting the clinical guidelines and was not adjusted for level of use. It was assumed that patients will access health care for these conditions at the PHC level and go through the referral process outlined in the clinical guidelines.[3] Thus, drugs to treat different OI/Cs will only be distributed to the levels determined in the Essential Drugs List for Uganda. Consequently, it was assumed that service capacity for OI/C treatment exists, and no special training for health workers is required in advance of distributing these drugs.

4. Although results from the most recent census show that Uganda's population is 24 million, this quantification used 22 million as the figure for total population. This was done to be consistent with accepted and available data for national HIV and AIDS prevalence rates, which was necessary for estimating drug and consumable requirements for OI/C.

5. Data on national HIV prevalence and AIDS prevalence is available in the most recent HIV/AIDS surveillance report. The HIV prevalence rate was taken at 6.8 percent (adjusted slightly upward based on an antenatal prevalence rate of 6.5 percent in 2001). Due to the passive nature of AIDS case reporting, the numbers captured in the report were assumed to be underestimated. An adult AIDS prevalence rate of 10 percent of people living with HIV/AIDS (PLWHA) was used, which is the rate used by AIDS Control Programme Managers in their planning.

6. Quantification for treatment of OI/C in adult AIDS cases will be done separately from AIDS in children due to limitations in data availability.

7. The WHO sponsored survey also revealed that only 49 percent of the population receives services from public sector health facilities in Uganda. This quantification assumed that the same health seeking behavior applies to treatment of OI/C. Thus, only 49 percent of the total AIDS cases were assumed to access public sector health facilities.

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[2] Uganda Pharmaceutical Sector Baseline Survey–2002. An Evaluation/Assessment of the Implementation of the National Drug Policy. Draft Report. November 2002. Commissioned by MOH/U in conjunction with WHO.

[3] Uganda Clinical Guidelines 2003. National Guidelines on Management of Common Diseases. Republic of Uganda, Ministry of Health. Expected publication of first edition: January 2003.

8. Prevalence data on 12 opportunistic and intercurrent infections and conditions are available in the surveillance report, but it is 2001 data and again assumed to be under-reported. Data on incidence rates or number of episodes per patient per infection/condition was not documented. Thus, the adjusted percentages on prevalence and number of episodes per patient per OI/C depicted in table 1 were developed in consultation with the Acting Principal Pharmacist and the STI/OI Program Manager at STD/ACP. These figures were also validated by a site visit to TASO's health clinic at Mulago hospital, where OI/C treatment is routinely provided to PLWHA. Discussions with the Medical Coordinator at the site and data from four months of diagnosis (see appendix C) supported the validity of the adjusted percentages used for the quantification, although the percentages from TASO and those used for the quantification are not identical, TASO's data show the same trends as were estimated by MOH/U. However, due to TASO's unique method of coding and reporting symptoms and diagnoses, as well as the fact that data from one TASO clinic may not be nationally representative, MOH's estimated percentages were not adjusted but assumed to be appropriate for national quantification.

Prevalence data for each OI/C is captured in table 1, while the number of episodes per patient per OI/C, with all logistics adjustments, are captured in the spreadsheets (tables 5–7) in appendix B.

Table 1. Estimates for Number of Adults AIDS Cases Treated for Opportunistic and Intercurrent Conditions and Infections, and Palliative Care *

Total population for 2002	22,000,000	A
Total number of people living with HIV/AIDS (A x 6.8 percent prevalence)	1,496,000	B
Total number of adults AIDS cases (B x 10 percent)	149,600	C
Total number of adults AIDS cases accessing public sector health services (C x 49 percent)	73,304	D
Percentage and number of cases by condition or infection		E
Fever (D x 100 percent)	73,304	E1
Weight loss (D x 100 percent)	73,304	E2
Oral thrush (D x 70 percent)	51,313	E3
Skin rash (D x 70 percent)	51,313	E4
Worm infestation (D x 70 percent)	51,313	E5
Diarrhea (D x 60 percent)	43,982	E6
Cough without TB (D x 60 percent)	43,982	E7
Herpes zoster (D x 30 percent)	21,991	E8
Kaposi's sarcoma (D x 10 percent)	7,330	E9
Cryptococcal meningitis (D x 5 percent)	3,665	E10
Palliative care (D x 20 percent)	**14,661**	**E11**

* List of conditions taken from "HIV/AIDS Surveillance Report" June 2002 and adapted by Acting Principal Pharmacist, MOH.

1. For each OI/C, a number of assumptions were used to determine final quantities. Assumptions specific to particular OI/Cs are listed as numbers 10–17. The following assumptions were uniform across all infections and conditions:

   - For each OI/C, drugs will be prescribed according to national clinical guidelines.
   - Patients will receive drugs for the entire course of treatment.
   - Patients will come back to the public sector for second- and third-line treatment rather than seeking care from NGO or private sector providers.
   - All drug quantities were adjusted for 5 percent losses and wastage.
   - A buffer stock of six months supply was built into the amounts quantified to ensure uninterrupted supplies if uptake patterns are inconsistent with assumption. It was assumed patient attendance at health facilities would likely increase due to increased availability of drugs.

- Given that these drugs are intended to augment the existing drug supply through NMS, stock on hand and quantities on order were not factored into the quantification (both were assumed to be zero). This is because recent surveys show that the existing drug supply is insufficient for public sector facility needs, especially given the increasing burden HIV/AIDS related conditions are placing on the health sector.[4]

2. *Fever*. Process for quantifying drugs for treating fever was based on the following: that each case presenting with fever would be treated as having malaria as an underlying causal factor, but malaria was not confirmed as a diagnosis. AIDS patients are susceptible to frequent episodes of a variety of OI/C, many with fever as one of the primary symptoms. However, when patients present with fever, prescribers routinely treat them for malaria without diagnosing the condition. So, even though malaria may not be the cause of the fever, it is likely during the first visit, that the patient will be treated for malaria. Thus, there is an overlapping element of this quantification that is already conducted by the malaria program. The quantification for the malaria program assumed four episodes per patient per year. This quantification calculated six episodes of fever per patient per year in addition to the four assumed by the malaria program. Essentially, the underlying assumption is that treatment for fever among this population was not captured by the malaria program quantification. It was also assumed that all pregnant HIV+ women would receive intermittent presumptive treatment (IPT) through the malaria program and similarly severe and resistant malaria will also be treated through the malaria program as confirmed diagnoses. Drugs to treat these diagnoses were not quantified.

3. *Oral thrush*. Oesophageal candidiasis (OC) was not separated from oral thrush nor did the quantification include quantities of fluconazole required to treat OC. It was assumed that patients would experience an extremely high number of episodes of oral thrush (10 per year) and that in only 75 percent of the patient episodes would patients seek first-line treatment. In the remaining 25 percent of patient episodes, the patients would immediately seek second-line treatment. If a quantification is done specifically for donated fluconazole for OCs, these percentages and the associated drug quantities should be adjusted accordingly.

4. *Skin rash*. The category was expanded to include rashes associated with herpes simplex (not herpes zoster).

5. *Diarrhea.* It was estimated that 50 percent of patient episodes would require a drip immediately. All 100 percent would be given first-line treatment, 50 percent after receiving the drip.

6. *Tuberculosis.* Drugs to treat TB were not quantified on the assumption that the TB program has already catered for TB-HIV co-infection rates and treatment for that cohort.

7. *Kaposi's sarcoma*. Patients presenting with Kaposi's sarcoma were differentiated between those who have superficial malignancies and those who have systemic malignancies. It was assumed that the 70 percent who have systemic malignancies would experience four episodes per year.

8. *Cryptococcal meningitis*. Diagnosis of cryptococcal meningitis (CM) is extremely difficult in public sector facilities because it requires a lumbar puncture, which is only performed at hospitals. Given that many people enter the health care system at HC II or HC III levels, they are often treated for symptoms rather than CM, and by the time they are diagnosed at the hospital level, disease is far advanced and amphotericin B is required for treatment. Only 80 percent of patients that receive amphotericin will enter the continuation phase that requires fluconazole.

[4] Uganda Pharmaceutical Sector Baseline Survey–2002. An Evaluation/Assessment of the Implementation of the National Drug Policy. Draft Report. November 2002. Commissioned by MOH/U in conjunction with WHO.

Treatment of CM with fluconazole for the first eight weeks is uniform for all patients, and consists of 400 mg once a day for that period. Thereafter, if patients are able to afford ART, they are started on ART and administered 200 mg of fluconazole once a day. When their CD4 counts are consistently above 350 for a 12-month period, they are taken off fluconazole. Patients that cannot afford ART remain on fluconazole for life. This quantification of fluconazole only takes into account new patients beginning fluconazole and not patients currently receiving the drug. For this reason, a lifetime (or full year) dose was quantified.

9. *Palliative care.* Two items specifically designated for palliative care in hospital settings were also included in the quantification (morphine sulphate oral powder and bisacodyl tablets). Thus, the total denominator of adult AIDS cases was used, and, in 2003, 20 percent are estimated to require these items during the terminal stage of disease. Given that the terminal phase of disease varies from a few weeks to five months, the average duration per patient in terminal stage was estimated at three months. Morphine powder for palliative care is usually imported into the country in powder form, and the MOH contracts Joint Medical Stores (JMS) to reconstitute the powder into an oral solution of 5 mg/5 ml strength. Requests to date have shown very little demand for 50 mg/5 ml concentration, thus quantification was only conducted for the weaker strength. It was estimated that one 500 ml bottle of 5 mg/5 ml would last one patient one week. Given that the total estimated need for morphine powder appears high—139 kg for 2003 (including a six-month buffer stock)—the quantities were validated as follows.

   Data from one site of the Uganda Hospice was analyzed and provided the following results: annual consumption of liquid morphine included approximately 1.2 kg of powder for 5 mg/5 ml strength (80 percent of patients) and 0.5 kg for 50 mg/5 ml strength (20 percent of a total of 168 patients). If these proportions were extrapolated to 14,661 patients (see table 1), the quantity of morphine powder would far exceed 139 kg. Furthermore, when compared with annual quantities of morphine available in six other sub-Saharan African countries, 139 kg appears to be a reasonable estimate if countries were able to estimate and pay for total needs.[5]

   Consumable supplies were estimated based on a factor per patient episode rather than for each OI/C. This will likely result in slightly higher quantities of each consumable item than are required specifically for OI/Cs, but it was done intentionally to ensure that health facilities are able to sustain effective infection control practices at each site.

Quantities of drugs to order for 2003 are listed in table 2. The quantities of individual tablets have been translated into packs and the quantities are listed as number of packs to order, with the pack size specified by the Acting Principal Pharmacist.

Table 2. Quantities of Drugs to Order for OI/C and Palliative Care Required between January–December 2003 for Public Sector Health Facilities ◆

Drug Name, Dosage, Form	Unit	Pack Size	Quantity of Packs to Order *
Acetyl salicylic acid 300 mg	Tablet	1000	4,156
Acyclovir 200 mg	Tablet	100	8,486
Acyclovir 5 percent cream 10 mg	Tube	1	48,492
Albendazole 200 mg	Tablet	100	1,616
Amoxicillin 250 mg	Capsule	1000	2,993
Betamethasone skin cream 20 mg	Tube	1	4,482
Bisacodyl 5 mg	Tablet	1000	4,018
Calamine lotion 500 ml	Bottle	1	393,696

[5] "Availability of Opioid Analgesics in Africa and the World." February 19, 2002. University of Wisconsin, Pain & Policy Studies Group. WHO Collaborating Centre for Policy & Communications in Cancer Care. Document available at http://www.medsch.wisc.edu/painpolicy.

Table 2. Quantities of Drugs to Order for OI/C and Palliative Care Required between January–December 2003 for Public Sector Health Facilities (continued) ◆

Drug Name, Dosage, Form	Unit	Pack Size	Quantity of Packs to Order *
Chloroquine 150 mg	Tablet	1000	6,927
Chloramphenicol 250 mg	Capsule	1000	2,993
Chlorhexidine solution 0.5 percent 500 ml	Bottle	1	323,280
Chlorpheniramine 4 mg	Tablet	1000	1,940
Clotrimazole skin cream 1 percent 20 g	Tube	1	35,784
Codeine phosphate 30 mg	Tablet	100	20,031
Cotrimoxazole 400/80 mg	Tablet	1000	8,313
Daktarin oral gel 20 mg	Tube	1	151,542
Dextrose solution 5 percent 500 ml	Bottle	1	519,534
Dextrose solution 50 percent 20 ml	Bottle	1	346,356
Erythromycin 250 mg	Tablet	1000	2,244
Hydrocortisone skin cream 1 percent 20 g	Tube	1	4,482
Ibuprofen 400 mg	Tablet	1000	4,156
Loperamide 2 mg	Capsule	100	38,099
Indomethacin 25 mg	Capsule	1000	3,117
Ketoconazole 200 mg	Tablet	30	168,371
Mebendazole 100 mg	Tablet	1000	808,000
Morphine sulphate oral powder 100 percent 1 kg (1000g)	Packet	1000 g	139,000
Multivitamin	Tablet	1000	75,853
Nystatin 500,000 I.U.	Tablet	500	96,982
ORS 50	Sachet	50	43,295
Paracetamol 500 mg	Tablet	1000	12,469
Sodium chloride 0.9 percent solution 500 ml	Bottle	1	1,119,888
Sulfadoxine + pyrimethamine 525 mg	Tablet	1000	2,078
Vitamin B12	Tablet	1000	14,790

◆ Quantities to Order through the World Bank MAP project. Does not include quantities of amphotericin B and fluconazole to treat Cryptococcal meningitis or fluconazole to treat oesophogeal candidiasis because these are donated free through Pfizer's Diflucan Partnership Program.

* Quantity to Order assumes zero SOH or Quantities on Order (see explanation under assumption # 9).

In February 2002, Pfizer and the Government of Uganda signed a Memorandum of Understanding regarding Pfizer's donation of fluconazole for treatment of CM and OC. Since that time Pfizer has acquired Pharmacia, and will also be donating amphotericin B with fluconazole for CM.[6] Since Pfizer has guaranteed to donate a full supply of fluconazole to treat these two infections, MOH should request quantities of these two items from Pfizer as opposed to purchasing them through MAP. Estimated needs for amphotericin B and fluconazole for treatment of newly diagnosed CM cases in 2003 are provided in table 3. These quantities should be adjusted for OC requirements as well as account for those patients currently on the continuation phase of fluconazole for CM.

Table 3. Quantities of Drugs for Newly Diagnosed Cases of Cryptococcal Meningitis between January–December 2003 for Public Sector Health Facilities

Drug Name, Dosage, Form	Unit	Pack Size	Quantity of Packs to Order
Amphotericin B 50 mg for infusion	Vial	1	80,820
Fluconazole 200 mg	Tablet	28	78,669

[6] Conversations between JSI/DELIVER and Pfizer, October 2002.

In addition, estimated supplies for consumable items to support treatment of OI/C and palliative care in 2003 are provided in table 4.

Table 4. Quantities of Consumable Supplies to Support Treatment of OI/C and Palliative Care Required between January–December 2003 for Public Sector Health Facilities

Description of Consumable Supplies	Unit	Pack Size	Quantity of Packs to Order*
IV giving sets with air inlet	Set	1	1,466,244
IV cannula gauge size 16	Piece	1	67,824
IV cannula gauge size 18	Piece	1	135,648
IV cannula gauge size 20	Piece	1	67,824
Gloves, examination, large	Piece	100	5,542
Gloves, examination, medium	Piece	100	8,313
Gloves, surgeon size 6	Pair	50	10,391
Gloves, surgeon size 7	Pair	50	20,782
Gloves, surgeon size 8	Pair	50	10,391
Disposable needles and syringes	Pack	100	13,854
Cotton wool 500 g	Roll	1	13,860
Cotton gauze absorbable 500 g	Pack	1	3,456
Surgical spirits 500 ml	Bottle	1	69,264
Water for injection 10 ml	Bottle	1	692,730

* Quantity to Order assumes zero SOH or Quantities on Order (see explanation under assumption # 9).

Recommendations

The following combination of short- and medium-term recommendations will ensure that time-sensitive actions and long-term strategic approaches with significant implications for commodity availability and logistics functions can be taken and/or begun. It is anticipated that the recommendations will be implemented collectively by the STD/ACP Programme and relevant partners internal and external to the MOH working in each programmatic area.

General Recommendations

Recommendation 1 (medium- to long-term). Continue advocating for the urgent need to recruit a senior logistics officer to work within the expanded pharmacy department. Although the DELIVER resident advisor will continue to work with the pharmacy department team in implementing logistics system improvement activities, it is important that the team include logistics management skills so capacity building within the MOH in the area of supply chain management is possible.

Recommendation 2 (medium-term). Explore the possibility of developing an action plan between all the units in the MOH and NMS to concretely determine the timeframe for integrating selected logistics management functions and obtain commitments to move the plan forward.

Recommendation 3 (medium-term). Expedite the development and maintenance of a central commodity database to track all MOH and donor inputs for essential health commodity supplies. This information has been, and is likely to continue to be, crucial in alerting commodity management donors and stakeholders about impending stockouts or shortages in various product categories. Especially in the case of drugs for treating OI/Cs, where these drugs are used for multiple other purposes, it is imperative that stock levels are continually monitored.

HIV/AIDS Care and Support

Quantification

Due to the lack of hard data, the quantification of drugs for treating OI/Cs required is based on a series of assumptions developed with STD/ACP program staff and the Pharmacy Unit about prevalence and incidence rates of the various OI/Cs. One of the fundamental assumptions was that all the drugs quantified for procurement would not be distributed through a separate vertical mechanism, but would supplement the overall "pot" of essential drugs and be distributed through NMS, with all other essential drugs for health facilities and hospitals. Due to the significant overlap between the drugs quantified for OI/C and other uses for these same drugs, tracking the accuracy of the quantification will be difficult and stockouts of some items might still be possible.

Recommendation 4 (short-term). Validate projections with STD/ACP program staff. Given that projections are primarily based on assumptions rather than data, they should be used as a starting point for thoughtful discussion prior to making concrete purchasing decisions.

Recommendation 5 (short-term). Ensure that quantities for treating OI/Cs in children are quantified and included in the overall needs estimates for OI/Cs and palliative care drugs.

Procurement and Financing

Recommendation 6 (short-term). Engage in discussions with local representatives from Axios and Pfizer to determine if Pfizer can donate quantities of amphotericin B and fluconazole listed in table 3 (or quantities adjusted for existing cases of CM and OC). If donations of either drug are not possible, ensure that quantities are procured using MAP funds.

Recommendation 7 (short-term). During the tendering process for these items under MAP, ensure that appropriate steps are taken to avoid delays of incoming products due to awards given to unregistered product manufacturers, as was the case with earlier awards for STI and TB drugs.

Recommendation 8 (short-term). When developing the procurement plan, consult NMS on stock status to prevent overstocking of certain items (such as antimalarial drugs), and to ensure there is sufficient storage space for incoming items at the NMS warehouse.

Recommendation 9 (medium-term). Ensure that once the procurement mechanism for GFATM has been selected, safeguards are put in place to expedite receipt of products and steps taken to prevent delays due to awards given to unregistered product manufacturers.

Recommendation 10 (medium-term). MOH, UAC, WB, and National Drug Authority (NDA) staff to communicate regularly on shipment status of awarded tenders to ensure that potential delays of incoming commodities, whether through delayed registration or other causes, are identified early enough for timely resolution.

Storage and Distribution

Recommendation 11 (medium- to long-term). Given that these items will enter the existing drug supply system managed by NMS, ensure that MOH has sufficient funds to pay for their storage and distribution by NMS. In addition, if special arrangements are required for distribution and reporting of specialized drugs, ensure that these are developed and disseminated prior to arrival of the drugs.

Information Systems

Recommendation 12 (medium- to long-term). Continue to explore mechanisms for regularly tracking consumption of these items and compare this to service statistics data to validate quantities ordered, and to ensure availability of more accurate data for future quantification excercises. Of particular concern is the possibility that more than 49 percent of patients with OI/Cs might access public sector health facilities because (a) a more regular drug supply is likely to increase patient attendance, and (b) patients with OI/Cs might not exhibit the same health seeking behavior demonstrated by the WHO study. This is because their health care needs are increasing without a corresponding increase in financial resources to pay for health care. If either of these hypotheses are true, drug quantities listed earlier will need to be increased to meet the higher demand.

Use

Recommendation 13 (short- to medium-term). The Pharmacy Unit, in conjuction with STD/ACP, should standardize clinical guidelines or standard treatment guidelines for all OI/Cs at all levels of the system and disseminate these to PHCs and hospitals to improve prescribing patterns and enhance quality of care and rational drug use.

Appendix A

People Contacted

People Contacted

Name	Organization	Telephone
Dr. Charles Hitimana-Lukanika	Executive Director, AIDS Information Centre	077 420900
Mr. Tephy Mujurizi	Laboratory Technologist, AIC	077 495547
Mrs. Josephine Kalule	Program Manager, AIC	077 412373
Rebekah Mkasa	PMTCT Coordinator, AIC	077 495547
Dr. Robert Downing	CDC/UVRI	075 788222
Dr. Rebecca Bunnel	CDC/Uganda	075 751019
Dr. Donna Kabatesi	CDC/Uganda	075 751029
Ms. Caroline Healey	Crown Agents	
Mr. Steve Wilbur	Resident Advisor, JSI/DELIVER	077 755444
Dr. Moses Muwonge	Technical Advisor, JSI/DELIVER	077 537722
Dr. Fred Sebisubi	Acting Principal Pharmacist, MOH	071 740967
Dr. Zainab Akol	STD/ACP, MOH	077 451008
Mrs. Vastha Kibirige	STD/ACP, MOH	077 565100
Dr. Wilford Kirungi	STD/ACP, MOH	077 434139
Dr. Elizabeth Madraa	STD/ACP, MOH	077 695109
Dr. Joshua Musinguzi	STD/ACP, MOH	077 611135
Dr. Elizabeth Namagala	STD/ACP, MOH	077 490150
Dr. Saul Onyango	STD/ACP, MOH	077 508669
Dr. Francis Adatu	TB/Leprosy, MOH	077 501988
Saul Kidde	NMS	077 771337
Dr. Alex Godwin Coutinho	CEO, TASO	077 767637
Dr. Francis Kasozi	Medical Coordinator, TASO Mulago	077 361629
Ms. Betty Nabirye	Manager, TASO Mulago	077 415464
John Kokas Omiat	Procurement Officer, UACP/UAC	077 377346
Chris Forshaw	Pharmaceutical Advisor, UHSSP	077 760176
Hanif Nazerali	District, Drug Management Advisor, UHSSP	077 771772
Suzanne McQueen	USAID PHN Officer	077 200529
Dr. Joseph Imoko	WHO/TB Medical Officer	
Joseph Serutoke	WHO Professional Officer	077 771339

Appendix B

Methodology for Quantifying Drugs for Treating Opportunistic and Intercurrent Conditions and Infections, and Palliative Care

Table 5. Estimated Requirements for Drugs to Treat OI/C for Uganda January 2003–December 2003

	Diagnosis / Condition	Year 2003 Estimated # of Patients (A)	Year 2003 Estimated # of Episodes (B)	Year 2003 Estimated # of Patient Episodes (A*B)	No. of Visit	Drug Product	Basic Unit	Basic Unit Per Dose	No. Doses Per Day	No. of Days	Basic Units Per Epi-sode	Total Basic Units Needed
E1	**Fever**	**73,304**	**6**	**439,824**								
	100 percent			439,824	1st	1. Chloroquine 600 mg (150 mg tabs x 4) od x 2d,	Tablet	4	1	2	8	3,518,592
						plus chloroquine 300 mg (150 mg tabs x 2) od x 1d		2	1	1	2	879,648
	100 percent			439,824		2. 25 mg/kg sulfadoxine + 1.25 mg/kg pyrimethamine stat (525 mg tabs x 3)	Tablet	3	1	1	3	1,319,472
	75 percent			329,868		3. Paracetamol 1 g (500 mg tabs x 2) 6 hrly x 3d	Tablet	2	4	3	24	7,916,832
	25 percent			109,956		3. Acetyl salicylic acid 600 mg (300 mg tabs x 2) 6 hrly x 3d	Tablet	2	4	3	24	2,638,944
	25 percent			109,956		4. Ibuprofen 800 mg (400 mg tabs x 2) 6 hrly x 3d	Tablet	2	4	3	24	2,638,944
	25 percent			109,956		4. Indomethacin 50 mg (25 mg caps x 2) 8 hrly x 3d	Capsule	2	3	3	18	1,979,208
E2	**Weight Loss**	**73,304**	**1**	**73,304**								
	90 percent			65,974	1st	1. Multivitamin 1 tab bd x 365d	Tablet	1	2	365	730	48,160,728
	70 percent			51,313	1st	1. Vitamin B12 1 tab od x 183	Tablet	1	1	183	183	9,390,242

Table 5. Estimated Requirements for Drugs to Treat OI/C for Uganda January 2003–December 2003 (continued)

	Diagnosis / Condition	Year 2003 Estimated # of Patients (A)	Year 2003 Estimated # of Episodes (B)	Year 2003 Estimated # of Patient Episodes (A*B)	No. of Visit	Drug Product	Basic Unit	Basic Unit Per Dose	No. Doses Per Day	No. of Days	Basic Units Per Episode	Total Basic Units Needed
E3	**Oral thrush**	**51,313**	**10**	**513,130**								
	75 percent			384,848	1st	1. Nystatin 1,000,000 IU (500,000 IU tabs x 2) 6 hrly x 10d	Tablet	2	4	10	80	30,787,800
	25 percent			128,283	1st	1. Ketoconazole 200 mg (1 tab) bd x 5d	Tablet	1	2	5	10	1,282,825
				384,848								
	50 percent will not respond			192,424	2nd	1. Ketoconazole 200 mg (1 tab) bd x 5d	Tablet	1	2	5	10	1,924,238
				128,283								
	30 percent will not respond			38,485	2nd	1. Daktarin oral gel 5 ml (1 tsp) bd x 5d	Tube	1	1	1	1	38,485
				192,424								
	30 percent will not respond			57,727	3rd	1. Daktarin oral gel 5 ml (1 tsp) bd x 5d	Tube	1	1	1	1	57,727

Table 5. Estimated Requirements for Drugs to Treat OI/C for Uganda January 2003–December 2003 (continued)

	Diagnosis / Condition	Year 2003 Estimated # of Patients (A)	Year 2003 Estimated # of Episodes (B)	Year 2003 Estimated # of Patient Episodes (A*B)	No. of Visit	Drug Product	Basic Unit	Basic Unit per Dose	No. Doses per Day	No. of Days	Basic Units per Episode	Total Basic Units Needed
E4	**Skin Rash**	**51,313**	**4**	**205,252**								
	100 percent			205,252	1st	1. Calamine lotion apply 12 hrly (500 ml bottle)	Bottle	1	1	1	1	205,252
						2. Chlorpheniramine 4 mg (4 mg tab x 1) bd x 3d	Tablet	1	2	3	6	1,231,512
						3. Chlorhexidine solution 0.5 percent (500 ml bottle)	Bottle	1	1	1	1	205,252
E5	**Worms**	**51,313**	**2**	**102,626**								
	100 percent			102,626	1st	1. Mebendazole 500 mg stat (100 mg tabs x 5)	Tablet	5	1	1	5	513,130
				102,626								
	50 percent will not respond			51,313	2nd	1. Albendazole 400 mg (200 mg tabs x 2) od stat	Tablet	2	1	1	2	102,626
E6	**Diarrhea**	**43,982**	**5**	**219,910**								
	50 percent will need a drip			109,955	1st	1. IV giving sets with air inlet (I per episode)	Set	1	1	1	1	109,955
						2. IV cannula (1 per episode)	Piece	1	1	1	1	109,955
						3. Sodium chloride solution 0.9 percent (500 ml bottle) 2:1 ratio with dextrose, 2 bottles per day x 2d	Bottle	1	2	2	4	439,820

Table 5. Estimated Requirements for Drugs to Treat OI/C for Uganda January 2003–December 2003 (continued)

Diagnosis / Condition	Year 2003 Estimated # of Patients (A)	Year 2003 Estimated # of Episodes (B)	Year 2003 Estimated # of Patient Episodes (A*B)	No. of Visit	Drug Product	Basic Unit	Basic Unit per Dose	No. Doses per Day	No. of Days	Basic Units per Episode	Total Basic Units Needed
					4. Dextrose solution 5 percent (500 ml bottle), 1 bottle per day x 2d	Bottle	1	1	2	2	219,910
25 percent will need conc gluc			54,978		5. Dextrose solution 50 percent (20 ml bottle) 1:1 ratio	Bottle	1	1	2	2	109,955
					1:1 ratio with 5 percent dextrose, I bottle per day x 2d						
100 percent first line treatment			219,910	1st	1. ORS 1 sachet od x 5d	Sachet	1	1	5	5	1,099,550
					2. Loperamide 4 mg stat (2 mg caps x 2)	Capsule	2	1	1	2	439,820
					plus 1 cap 8 hrly x 3d	Capsule	1	3	3	9	1,979,190
			219,910								
25 percent will not respond			54,978	2nd	1. IV giving sets with air inlet (I per episode)	Set	1	2	7	14	769,685
					2. IV cannula (1 per episode)	Piece	1	1	1	1	54,978
					3. Sodium chloride solution 0.9 percent (500 ml bottle)	Bottle	1	2	2	4	219,910
					2:1 ratio with dextrose, 2 bottles per day x 2d						
					4. Dextrose solution 5 percent (500 ml bottle), 1 bottle per day x 2d	Bottle	1	1	2	2	109,955
					5. Dextrose soution 50 percent (20 ml bottle) 1:1 ratio 1:1 ratio with 5 percent dextrose, I bottle per day x 2d	Bottle	1	1	2	2	109,955

Table 5. Estimated Requirements for Drugs to Treat OI/C for Uganda January 2003–December 2003 (continued)

	Diagnosis / Condition	Year 2003 Estimated # of Patients (A)	Year 2003 Estimated # of Episodes (B)	Year 2003 Estimated # of Patient Episodes (A*B)	No. of Visit	Drug Product	Basic Unit	Basic Unit per Dose	No. Doses per Day	No. of Days	Basic Units per Episode	Total Basic Units Needed
						6. ORS 1 sachet od x 5d	Sachet	1	1	5	5	274,888
						7. Codeine phosphate 60 mg (30 mg tabs x 2) bd x 5d	Tablet	2	2	5	20	1,099,550
E7	**Cough w/out TB**	**43,982**	**6**	**263,892**								
	100 percent			263,892	1st	1. Cotrimoxazole 960 mg (480 mg tabs x 2) bd x 5d	Tablet	2	2	5	20	5,277,840
				263,892								
	60 percent will not respond			158,335								
	40 percent (of the 60 percent)			63,334	2nd	1. Amoxicillin 500 mg (250 mg caps x 2) 8 hrly x 5d	Capsule	2	3	5	30	1,900,022
	30 percent (of the 60 percent)			47,501	2nd	1. Erythromycin 500 mg (250 mg tabs x 2) 8 hrly x 5d	Tablet	2	3	5	30	1,425,017
	30 percent (of the 60 percent)			47,501	2nd	1. Chloramphenicol 500 mg (250 mg caps x 2) 6 hrly x 5d	Capsule	2	4	5	40	1,900,022

Table 5. Estimated Requirements for Drugs to Treat OI/C for Uganda January 2003–December 2003 (continued)

	Diagnosis / Condition	Year 2003 Estimated # of Patients (A)	Year 2003 Estimated # of Episodes (B)	Year 2003 Estimated # of Patient Episodes (A*B)	No. of Visit	Drug Product	Basic Unit	Basic Unit per Dose	No. Doses per Day	No. of Days	Basic Units per Episode	Total Basic Units Needed
E8	**Herpes Zoster**	**21,991**	**1**	**21,991**								
	100 percent			21,991	1st	1. Calamine lotion apply 12 hrly (500 ml bottle)	Bottle	1	1	1	1	21,991
				21,991								
	70 percent will not respond			15,394	2nd	1. Acyclovir 5 percent cream 10 mg tube x 2 per episode	Tube	1	1	2	2	30,787
				15,394	2nd	1. Acyclovir 200 mg (1 tab) 5 hrly x 7d	Tablet	1	5	7	35	538,780
E9	**Kaposi's Sarcoma**	**7,330**	**1**	**7,330**								
	70 percent will have 4 episodes	**5,131**	**3**	**15,393**								
				22,723	1st	1. Calamine lotion apply 12 hrly (500 ml bottle)	Bottle	1	1	1	1	22,723
						2. Clotrimazole skin cream 1 percent (20 g tube)	Tube	1	1	1	1	22,723
				22,723								
	25 percent will not respond			5,681								

Table 5. Estimated Requirements for Drugs to Treat OI/C for Uganda January 2003–December 2003 (continued)

	Diagnosis / Condition	Year 2003 Estimated # of Patients (A)	Year 2003 Estimated # of Episodes (B)	Year 2003 Estimated # of Patient Episodes (A*B)	No. of Visit	Drug Product	Basic Unit	Basic Unit per Dose	No. Doses per Day	No. of Days	Basic Units per Episode	Total Basic Units Needed
	50 percent (of the 25 percent)			2,840	2nd	1. Hydrocortisone skin cream 1 percent (20 g tube)	Tube	1	1	1	1	2,840
				2,840	2nd	1. Betamethasone skin cream (20 mg tube)	Tube	1	1	1	1	2,840
E10	**Cryptococcal Meningitis**	**3,665**	**1**	**3,665**								
	100 percent			3,665	1st	1. Amphotericin B 50 mg for IV infusion (1 vial od x 14d)	Vial	1	1	14	14	51,310
						2. IV giving sets with air inlet (I per d x 14d)	Set	1	1	14	14	51,310
						3. IV cannula (2 per episode)	Piece	1	1	2	2	7,330
						4. Sodium chloride solution 0.9 percent (500 ml bottle) 1 bottle per day x 14d	Bottle	1	1	14	14	51,310
	50 percent			1,833		5. Codeine phosphate 30 mg (1 tab) bd x 7d	Tablet	1	2	7	14	25,655
				3,665								
	80 percent continuation											
				2,932	2nd	1. Fluconazole 400 mg (200 mg tabs x 2) od	Tablet	2	1	56	112	328,384
						x 56d plus 200 mg (1 tab) od x 365d	Tablet	1	1	365	365	1,070,180

Table 5. Estimated Requirements for Drugs to Treat OI/C for Uganda January 2003–December 2003 (continued)

	Diagnosis / Condition	Year 2003 Estimated # of Patients (A)	Year 2003 Estimated # of Episodes (B)	Year 2003 Estimated # of Patient Episodes (A*B)	No. of Visit	Drug Product	Basic Unit	Basic Unit per Dose	No. Doses per Day	No. of Days	Basic Units per Episode	Total Basic Units Needed
E11	**Palliative Care**	**14,661**	**1**	**14,661**								
	100 percent			14,661	1st	1. Codeine phosphate 30 mg (1 tab) bd x 5d	Tablet	1	2	5	10	146,610
						2. Bisacodyl 5 mg (1 tab) bd x 3d	Tablet	1	2	3	6	87,966
	100 percent			14,661	2nd	1. Morphine sulphate powder 100 percent for oral solution (reconstituted in 5 mg/5 ml solution, 1 bottle equiv to 500 ml) / patient / 7d x 84d (12 wk)	500 mg powder	1	1	12	12	175,932
						2. Bisacodyl 5 mg (1 tab) bd x 84d	Tablet	1	2	84	168	2,463,048

Table 5. Estimated Requirements for Drugs to treat OI/C for Uganda January 2003–December 2003 (continued)

Diagnosis / Condition	Estimated # of Patients	Estimated # of Episodes	Estimated # of Patients/ Episode	Consumable	Basic Unit	Basic Unit per Episode	Total Basic Units Needed	Total Basic Units by Type
All visits	73,304	6	439,824	Examination gloves	Piece	2	879,648	
				Gloves, examination, large, 100 pieces per pack (40 percent)				351,859
				Gloves, examination, medium, 100 pieces per pack (60 percent)				527,789
				Surgical gloves	Pair	3	1,319,472	
				Gloves, surgeon size 6 (pair) (25 percent)				329,868
				Gloves, surgeon size 7 (pair) (50 percent)				659,736
				Gloves, surgeon size 8 (pair) (25 percent)				329,868
				Disposable needles and syringes 100 each	Pack	2	879,648	879,648
				Water for injection 10 ml	Bottle	1	439,824	439,824
				Cotton wool 500 g	Pack		8,796	8,796
				Cotton gauze 500 g	Pack		2,199	2,199
				Surgical spirits 500 ml	Bottle		43,982	43,982
From above				IV giving sets with air inlet (1 per episode)	Set	1	930,950	930,950
				IV cannula	Piece		172,263	
				IV cannula gauge size 16 (25 percent)				43,066
				IV cannula gauge size 18 (50 percent)				86,131
				IV cannula gauge size 20 (25 percent)				43,066
				Morphine sulphate powder for oral solution 500 mg	500 mg	12	175,932	
					powder			
				Morphine sulphate powder for oral solution 1 kg				87,966

Table 6. Quantity to Order: Drugs for OI/C and Palliative Care, Consumables for Uganda January–December 2003

	QR	Adjusted QR			
Drug Product	**Total Basic Units Needed**	**Adjust for Losses/ Wastage 5 percent**	**AMQR Average Monthly Quantity Required**	**AMQR ´ BS AMQR ´ Buffer Stock in Months[1,2]**	**Annual QO Ann. Qty to Order (Tot. No. Basic Units)**
Acetyl salicyclic acid 300 mg tablet	2,638,944	2,770,891	230,908	1,385,448	4,156,344
Acyclovir 200 mg tablet	538,780	565,718	47,143	282,858	848,574
Acyclovir 5 percent cream 10 mg tube	30,787	32,327	2,694	16,164	48,492
Albendazole 200 mg tablet	102,626	107,757	8,980	53,880	161,640
Amoxicillin 250 mg capsules	1,900,022	1,995,024	166,252	997,512	2,992,536
Amphotericin B 50 mg vial for infusion	51,310	53,876	4,490	26,940	80,820
Betamethasone skin cream 20 mg tube	2,840	2,982	249	1,494	4,482
Bisacodyl 5 mg tablet	2,551,014	2,678,565	223,214	1,339,284	4,017,852
Calamine lotion 500 ml bottle	249,966	262,464	21,872	131,232	393,696
Chloroquine 150 mg tablet	4,398,240	4,618,152	384,846	2,309,076	6,927,228
Chloramphenicol 250 mg capsule	1,900,022	1,995,024	166,252	997,512	2,992,536
Chlorhexidine solution 0.5 percent 500 ml bottle	205,252	215,515	17,960	107,760	323,280
Chlorpheniramine 4 mg tablet	1,231,512	1,293,088	107,757	646,542	1,939,626
Clotrimazole skin cream 1 percent 20 g tube	22,723	23,859	1,988	11,928	35,784
Codeine phosphate 30 mg tablet	1,271,815	1,335,406	111,284	667,704	2,003,112
Cotrimoxazole 400/80 mg tablet	5,277,840	5,541,732	461,811	2,770,866	8,312,598
Daktarin oral gel 20 mg tube	96,212	101,022	8,419	50,514	151,542
Dextrose solution 5 percent 500 ml bottle	329,865	346,358	28,863	173,178	519,534
Dextrose solution 50 percent 20 ml bottle	219,910	230,906	19,242	115,452	346,356
Erythromycin 250 mg tablet	1,425,017	1,496,268	124,689	748,134	2,244,402
Fluconazole 200 mg tablet	1,398,564	1,468,492	122,374	734,244	2,202,732
Hydrocortisone skin cream 1 percent 20 g tube	2,840	2,982	249	1,494	4,482
Ibuprofen 400 mg tablet	2,638,944	2,770,891	230,908	1,385,448	4,156,344
Loperamide 2 mg capsule	2,419,010	2,539,961	211,663	1,269,978	3,809,934
Indomethacin 25 mg capsule	1,979,208	2,078,168	173,181	1,039,086	3,117,258
Ketoconazole 200 mg tablet	3,207,063	3,367,416	280,618	1,683,708	5,051,124
Mebendazole 100 mg tablet	513,130	538,787	44,899	269,394	808,182
Morphine sulphate oral powder 100 percent 1 kg	87,966	92,364	7,697	46,182	138,546
Multivitamin tablet	48,160,728	50,568,764	4,214,064	25,284,384	75,853,152

Table 6. Quantity to Order: Drugs for OI/C and Palliative Care, Consumables for Uganda January–December 2003 (continued)

Drug Product	QR Total Basic Units Needed	Adjusted QR Adjust for Losses/ Wastage 5 percent	AMQR Average Monthly Quantity Required	AMQR ´ BS AMQR ´ Buffer Stock in Months[1-4]	Annual QO Ann. Qty to Order (Tot. No. Basic Units)
Nystatin 500,000 I.U. tablet	30,787,800	32,327,190	2,693,933	16,163,598	48,490,794
ORS 50 sachets	1,374,438	1,443,159	120,263	721,578	2,164,734
Paracetamol 500 mg tablet	7,916,832	8,312,674	692,723	4,156,338	12,469,014
Sodium Chloride 0.9 percent solution 500 ml bottle	711,040	746,592	62,216	373,296	1,119,888
Sulfadoxine + Pyrimethamine 525 mg tablet	1,319,472	1,385,446	115,454	692,724	2,078,172
Vitamin B12 tablet	9,390,242	9,859,755	821,646	4,929,876	14,789,628
Expendable Medical Supplies					
IV giving sets with air inlet (1 each)	930,950	977,498	81,458	488,748	1,466,244
IV cannula gauge size 16 (1 each)	43,066	45,219	3,768	22,608	67,824
IV cannula gauge size 18 (1 each)	86,131	90,438	7,536	45,216	135,648
IV cannula gauge size 20 (1 each)	43,066	45,219	3,768	22,608	67,824
Gloves, examination, large, 100 pieces per pack	351,859	369,452	30,788	184,728	554,184
Gloves, examination, medium, 100 pieces per pack	527,789	554,178	46,182	277,092	831,276
Gloves, surgeon size 6 (pair)	329,868	346,361	28,863	173,178	519,534
Gloves, surgeon size 7 (pair)	659,736	692,723	57,727	346,362	1,039,086
Gloves, surgeon size 8 (pair)	329,868	346,361	28,863	173,178	519,534
Disposable needles and syringes 100 each	879,648	923,630	76,969	461,814	1,385,442
Cotton wool 500 g	8,796	9,236	770	4,620	13,860
Cotton gauze 500 g	2,199	2,309	192	1,152	3,456
Surgical spirits 500 ml	43,982	46,182	3,848	23,088	69,264
Water for injection 10 ml bottle	439,824	461,815	38,485	230,910	692,730

[1] Lead Time = The time from preparation of the order, to approval, procurement, shipment to or within country, customs clearance, and time in central warehouse for reception,

[2] inspection, storage and packaging until ready for distribution.

[3] For the purposes of this quantification, buffer stock = 0.5 lead time or 6 months

[4] Current stock on hand is assumed to be zero given reported shortages and stockouts. Therefore, additional quantities of product are required to cover lead time and buffer stock.

Table 7. Summary Cost Estimate for OI/C Drugs, Palliative Care and Consumable Supplies Uganda January–December 2003

No.	Drug Product	Strength (a)	Basic Unit (b)	Quantity to Order [Total No. Basic Units] (c)	Pack Size (d)	Quantity to Order [Rounded to Pack Size] (e)	Basic Unit Cost (U.S.$)* NMS (f)	Pack Size Cost (U.S.$)** NMS (g)	Total Cost (U.S.$) NMS (h)
	Acetyl salicyclic acid 300 mg tablet	300 mg	Tablet	4,156,344	1000	4,156			
	Acyclovir 200 mg tablet	200 mg	Tablet	848,574	100	8,486			
	Acyclovir 5 percent cream 10 mg tube	10 mg	Tube	48,492	1	48,492			
	Albendazole 200 mg tablet	200 mg	Tablet	161,640	100	1,616			
	Amoxicillin 250 mg capsules	250 mg	Capsule	2,992,536	1000	2,993			
	Amphotericin B 50 mg vial for infusion	50 mg	Vial	80,820	1	80,820			
	Betamethasone skin cream 20 mg tube	20 mg	Tube	4,482	1	4,482			
	Bisacodyl 5 mg tablet	5 mg	Tablet	4,017,852	1000	4,018			
	Calamine lotion 500 ml bottle	500 ml	Bottle	393,696	1	393,696			
	Chloroquine 150 mg tablet	150 mg	Tablet	6,927,228	1000	6,927			
	Chloramphenicol 250 mg capsule	250 mg	Capsule	2,992,536	1000	2,993			
	Chlorhexidine solution 0.5 percent 500 ml bottle	500 ml	Bottle	323,280	1	323,280			
	Chlorpheniramine 4 mg tablet	4 mg	Tablet	1,939,626	1000	1,940			
	Clotrimazole skin cream 1 percent 20 g tube	20 g	Tube	35,784	1	35,784			
	Codeine phosphate 30 mg tablet	30 mg	Tablet	2,003,112	100	20,031			
	Cotrimoxazole 400/80 mg tablet	400/80 mg	Tablet	8,312,598	1000	8,313			
	Daktarin oral gel 20 mg tube	20 mg	Tube	151,542	1	151,542			
	Dextrose solution 5 percent 500 ml bottle	500 ml	Bottle	519,534	1	519,534			
	Dextrose solution 50 percent 20 ml bottle	20 ml	Bottle	346,356	1	346,356			
	Erythromycin 250 mg tablet	250 mg	Tablet	2,244,402	1000	2,244			
	Fluconazole 200 mg tablet	200 mg	Tablet	2,202,732	28	78,669			
	Hydrocortisone skin cream 1 percent 20 g tube	20 g	Tube	4,482	1	4,482			
	Ibuprofen 400 mg tablet	400 mg	Tablet	4,156,344	1000	4,156			
	Loperamide 2 mg capsule	2 mg	Capsule	3,809,934	100	38,099			
	Indomethacin 25 mg capsule	25 mg	Capsule	3,117,258	1000	3,117			
	Ketoconazole 200 mg tablet	200 mg	Tablet	5,051,124	30	168,371			
	Mebendazole 100 mg tablet	100 mg	Tablet	808,182	1000	808			
	Morphine sulphate oral powder 100 percent 1 kg pack	1000 g	Pack	138,546	1000 g	139			

Table 7. Summary Cost Estimate for OI/C Drugs, Palliative Care and Consumable Supplies UGANDA January–December 2003 (continued)

No.	Drug Product	Strength (a)	Basic Unit (b)	Quantity to Order [Total No. Basic Units] (c)	Pack Size (d)	Quantity to Order [Rounded to Pack Size] (e)	Basic Unit Cost (U.S.$)* NMS (f)	Pack Size Cost (U.S.$)** NMS (g)	Total Cost (U.S.$) NMS (h)
	Multivitamin tablet		Tablet	75,853,152	1000	75,853			
	Nystatin 500,000 I.U. tablet	500,000 I.U.	Tablet	48,490,794	500	96,982			
	ORS 50 sachets		Sachet	2,164,734	50	43,295			
	Paracetamol 500 mg tablet	500 mg	Tablet	12,469,014	1000	12,469			
	Sodium chloride 0.9 percent solution 500 ml bottle		Bottle	1,119,888	1	1,119,888			
	Sulfadoxine + pyrimethamine 525 mg tablet	525 mg	Tablet	2,078,172	1000	2,078			
	Vitamin B12 tablet		Tablet	14,789,628	1000	14,790			
								Total	
	Description of Item								
	Expendable Medical Supplies & Equipment								
	IV giving sets with air inlet (1 each)		Set	1,466,244	1	1,466,244			
	IV cannula gauge size 16 (1 each)		Piece	67,824	1	67,824			
	IV cannula gauge size 18 (1 each)		Piece	135,648	1	135,648			
	IV cannula gauge size 20 (1 each)		Piece	67,824	1	67,824			
	Gloves, examination, large, 100 pieces per pack		Piece	554,184	100	5,542			
	Gloves, examination, medium, 100 pieces per pack		Piece	831,276	100	8,313			
	Gloves, surgeon size 6 (pair)		Pair	519,534	50	10,391			
	Gloves, surgeon size 7 (pair)		Pair	1,039,086	50	20,782			
	Gloves, surgeon size 8 (pair)		Pair	519,534	50	10,391			
	Disposable needles and syringes 100 each		Pack	1,385,442	100	13,854			
	Cotton wool 500 g	500 g	Roll	13,860	1	13,860			
	Cotton gauze absorbable 500 g	500 g	Pack	3,456	1	3,456			
	Surgical spirits 500 ml	500 ml	Bottle	69,264	1	69,264			
	Water for injection 10 ml bottle	10 ml	Bottle	692,730	1	692,730			
								Total	$0
							Grand Total		$0

* Exchange Rate U.S.$1.00 = 1800 Ushs. 4/2002

** Actual WB contract prices not available, so total shipment cost divided by quantity used to estimate unit price, based on letter from UAC 27 August 2002.

Appendix C

Overview of Services Provided by The AIDS Service Organization (TASO)

Data on OI/Cs Treated at TASO Mulago from June–November 2002

The AIDS Service Organization (TASO)

TASO was founded in 1987 as a NGO dedicated to providing counseling, medical and social services, and capacity building for HIV-positive clients and communities.[7] Since 1987, TASO has served a total of 72,419 clients, of which 19,918 received medical services in 2001. TASO has seven centers in Mbarara, Masaka, Entebbe, Jinja, Mulago, Mbale, and Tororo districts, each with a catchment area of 40 kms. TASO Mbarara has the largest number of registered clients and Entebbe the smallest. TASO Mulago, where information for this quantification was collected, has the second largest number of registered clients, about 16,000. TASO registers clients who have tested HIV positive and are interested in receiving continous care. Care is provided through clinics at facilities as well as through outreach clinics at government health facilities and home visits. All TASO sites are located next to or within large government hospitals. With the exception of Mulago, all TASO sites have well functioning laboratories.

Background on Medical Services Provided by TASO

More than 52 percent of TASO clients rank provision of medical services as their greatest need. Clinics charge clients a nominal fee for medical visits (Ushs. 500/-), not to cover services but to cover refreshments provided to clients during visits. The majority of TASO clients are referred from the AIC, which provides VCT. TASO uses MOH clinical guidelines to provide treatment for the entire spectrum of OI/C. All TASO clients that cannot be treated on site are referred for admissions, specialized hospital care, and health centers closer to clients' homes. For Cryptococcal meningitis, diagnosis is made using a combination of clinical criteria and a positive serum crag test. Although these tests are more expensive than lumbar punctures (LP), there is significant client bias against LPs and the serum test ensures early diagnosis. Clients are referred to hospitals for adminstration of amphotericin B and continuation with fluconazole, donated by Pfizer.

Drug Procurement and Logistics Management

Drug supply is regular because of the continuous support from donors, including DANIDA, USAID, DFID, Swedish International Development Agency (SIDA), the EU, and CDC. The Medical Coordinator at each site conducts quarterly needs estimates using data from the information system (both consumption and service statistics data). Each site conducts independent procurement of drugs, and has a Procurement Committee that consists of the treasurer, an accountant, the Medical Coordinator, and a representative from the Central Advisory Committee. After quantifying needs, each site obtains quotations from three local suppliers, usually including NMS and JMS. Procurement decisions are usually based on the lowest quote received.

[7] The AIDS Support Organization Uganda Ltd. 2001 Annual Report. Kampala, Uganda.

Explanation of Data Obtained on Treatment of OI/C at TASO Mulago

Discussions with the Medical Coordinator confirmed that fever and weight loss were the OI/Cs most affecting their clients. He listed the following in priority order as the most common OI/Cs: skin problems, oral thrush, diarrhea, TB, herpes zoster, Kaposi's sarcoma, and CM. TASO's health information system has codes for about 90 specific diagnoses and symptoms, and each patient card can record up to five simultaneous conditions. These conditions are not recorded, however, in priority order, making it difficult to sort diagnoses according to frequency. TASO is currently revising its coding system and its medical forms.

Data that was available on the 12 OI/Cs reviewed for this quantification are listed in table 8. For all conditions recorded between June 30 and November 27, frequencies and percentages of the 12 OI/Cs was extracted. The average percentage and ranking were calculated.

Table 8: Average Percentage and Ranking of 12 Selected OI/Cs between June–November 2002 at TASO Mulago

Opportunistic and Intercurrent Infections and Conditions	Average Percentage	Ranking
Skin rash	8.5	1
Cough without TB	8.6	2
Fever	3.0	3
Oral thrush	2.9	5
Oral sores	1.75	5
Diarrhea	1.7	5
Fungal skin infections	1.5	7
Oesophageal candidiasis	0.7	8
Worms	0.6	9
Confirmed malaria	0.4	10
Herpes zoster	0.3	11
Kaposi's sarcoma	0.1	12